KEY ELEMENTS

OF A STRATEGIC PLAN

TO IMPLEMENT THE DELTA VISION

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Submitted to:

Delta Vision Blue Ribbon Task Force

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TO IMPLEMENT THE DELTA VISION

Executive Summary

- Nine clear, measurable and enforceable targets for the Delta ecosystem, to maintain resident fish populations at levels greater than the 1967 – 1991 period before the ecosystem collapse; restore 325,000 acres of four habitat types in the Delta, Suisun Marsh and adjacent areas; increase Delta outflow to about 65% of spring runoff, and to higher levels in the fall as well; and provide other environmental benefits.
- Enough dedicated environmental water to meet the targets.
- A new Delta Water Master to oversee use of the environmental water.
- A new Delta State Park and National Heritage Area, along with stronger oversight of land use in all areas of the Delta.
- A new water use fee, and specific criteria for financing future projects.

INTRODUCTION

At the heart of the conflict over the fate of the Sacramento-San Joaquin Delta has been an approach to managing the Delta's resources that is intended to maximize water diversion and land conversion while limiting the protection of native species and habitats to regulatory minima and voluntary efforts. By designating the Delta ecosystem as a co-equal value that must function as an integral part of a healthy estuary, and by calling for the incorporation of the constitutional principles of reasonable use and public trust into water resource policymaking and for other improvements in institutions and policies, the Delta Vision seeks to redress the imbalance between protection of the Delta ecosystem and how the Delta is managed for water supply and land use. The Strategic Plan must first and foremost identify the steps necessary to elevate Delta ecosystem protection as a co-equal value.

The Delta Vision Blue Ribbon Task Force has invited interested parties to propose elements for its October 2008 Strategic Plan with emphasis on three areas (appropriately incorporating the principles of reasonable use and public trust in California water policy making; governance and strategic finance; and reliable water for California). Recommendations concerning the third area will be the subject of a separate document. In order to adequately address the first two areas, establish the co-equal values of the Delta ecosystem, and implement the twelve recommendations contained in the November 30, 2007, Delta Vision, the Bay Institute, the Environmental Defense Fund, the Natural Resources Defense Council, Defenders of Wildlife and Sierra Club California propose the following Strategic Plan elements:

1. Adopting clear, measurable and enforceable targets for protection of the Delta ecosystem as an integral part of a healthy estuary that address abundance of estuarine species, extent of tidally and seasonally inundated habitat, frequency and duration of Delta outflows, and limit entrainment and contaminant effects to levels that do not harm Delta species.
2. Incorporating ecosystem targets that comply with the public trust constitutional requirement, by statute, rulemaking and executive order as appropriate, in the state and local permits and licenses of all water users and land managers.
3. Securing additional water for the environment to help meet ecosystem targets, including a new state environmental water right allowing for the appropriation of water to augment minimum regulatory requirements for fish and wildlife purposes.
4. Creating a new Delta Water Master entity to manage environmental water, beyond the minimum regulatory requirements, and to oversee water operations in the Delta and interbasin transfers.
5. Strengthening regulation of land use in the Delta by creating the Delta equivalent of the Bay Conservation and Development Commission (through modification of the Delta Protection Commission or replacement with a new entity).
6. Working with Delta communities to establish a new Delta State Park and Delta National Heritage Area,

7. Implementing clearly defined "beneficiary pays" criteria within all aspects of the Delta Vision, with particular attention to costly infrastructure projects.
8. Establishing user fees based on the volumetric consumption of water, and other funding sources to support attainment of Delta ecosystem targets and other public policy purposes.

INCORPORATING THE PUBLIC TRUST PRINCIPLE IN WATER POLICYMAKING: ECOSYSTEM TARGETS; PERMITS AND LICENSES; NEW ENVIRONMENTAL WATER

The following section provides details on the first three steps, which are intended to incorporate the public trust constitutional requirement into decisions about resource policy and management: ecosystem targets, their incorporation into state and local permits and licenses, and a new environmental water right.

Last fall, a number of highly respected scholars correctly pointed out to the Task Force that the reasonable use and public trust doctrines are synergistic and reinforcing: "A use of water violative of elements of the public trust is not reasonable." As these scholars stated, the constitutional requirement of "reasonable use" and the even more ancient doctrine of the public trust are twin foundations of California water law. The right to use water is limited to the amount of water reasonably required for the beneficial use to be served. The right does not extend to waste, or to unreasonable methods of diversion. What constitutes reasonable

use must take into account not only the rights of other water users but the broader public interest. Under the California constitution, Art 10, sec 2, no one in this state can have a protectable interest in the unreasonable use of water.

The public trust doctrine provides that the people of California own all of its waterways and lands beneath and that the state government serves as "trustee of a public trust for the benefit of the people." *National Audubon Society v Superior Court* (1983). 658 P.2d 709 (*National Audubon*). The doctrine imposes on the state an ongoing duty to protect "trust resources" which include explicitly fish, aquatic habitats, and even scenic beauty. In practical terms, the public trust means that - as is true under the reasonable use doctrine - no one can obtain a vested right in a use of water that harms trust resources. At best, water rights are burdened with an ongoing examination of the water requirements to ensure the long-term health of trust resources.

National Audubon, decided a quarter century ago, remains the pre-eminent California Supreme Court case on this issue. The court held that the public trust is not simply an affirmation of the power of the state to use water for general public purposes, even the important public purpose of providing drinking water. Rather, the public trust is "an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands, and tidelands, surrendering that right only in rare cases where abandonment is consistent with the purposes of the trust." Thus, as the professors pointed out, all elements of state government have the duty to protect, preserve and even restore the state's public trust resources, such as fish, habitat and wildlife.

For the purposes of the Delta Vision, the great benefit of *National Audubon* is that it provides a roadmap for integrating long-standing water rights with these concepts of ensuring environmental health. The court declined to hold that all past allocations harmful to trust resources were improper, but strongly confirmed the state's obligation to correct past mistakes regardless of the longevity of water rights. Key to this holding was the court's rejection of the argument that 'vested' water rights preclude the application of public trust or reasonable use principles to an environmental problem. Indeed, the high court reiterated eight separate times within the opinion that no one can acquire vested rights to use water in a manner harmful to trust resources.

So how does the state integrate existing water management and the public trust and reasonable use doctrines? *National Audubon* accomplishes this integration through a weighted balance. The public trust imposes a substantive duty on the State to affirmatively protect fish and other water-related resources "whenever feasible," and must "avoid or minimize any harm" to those resources.

Reasonable use and public trust principles both require that water diversions must be compatible with a healthy environment. Placing an environmental standard as the foundation for water policy is one of the most important ways that Delta Vision's Strategic Plan could incorporate these principles into water management going forward.

In the past, the State has felt constrained even when environmental harm was specifically

the anticipated result of proposed diversions. In 1940, when it issued the water rights permits to Los Angeles that would later be at issue in *National Audubon*, the State Water Resources Control Board (the State Water Board) knew that its actions were going to cause grave harm to Mono Lake. The Board characterized this result as "indeed unfortunate," but stated that "there is apparently nothing that this office can do to prevent" the diversions. *National Audubon*, 658 P.2d at 714, citing Division of Water Resources Decs. 7053 et al. (April 11, 1940).

The way to best incorporate these principles in water policy making and Delta resource management is to adopt specific ecosystem targets and then incorporate them into all relevant permits and licenses.

Targets for protection of the Delta ecosystem as an integral part of a healthy estuary

Viable and Resilient Populations

The Delta Vision's overarching goal that the Delta function as an integral part of a healthy estuary requires that it be able to support viable, resilient populations of estuarine species.

Target 1. Restore abundance of estuarine fish species to greater than 104% of average levels measured during the 1967-1991 period.

This performance target measures the combined abundance of three estuarine fish species (delta smelt, longfin smelt, and splittail) relative to their average combined abundance measured for the 1967-1991 period (Figure 1). These species were selected because they represent estuary-dependent aquatic organisms with a wide range of life-history requirements. The target level, greater than the average 1967-1991 abundance (or greater than the average plus one standard error, or >104%), represents an abundance level at which estuarine fish populations are viable (i.e., at low risk of extinction) and resilient (i.e., capable of responding to variations in environmental conditions without

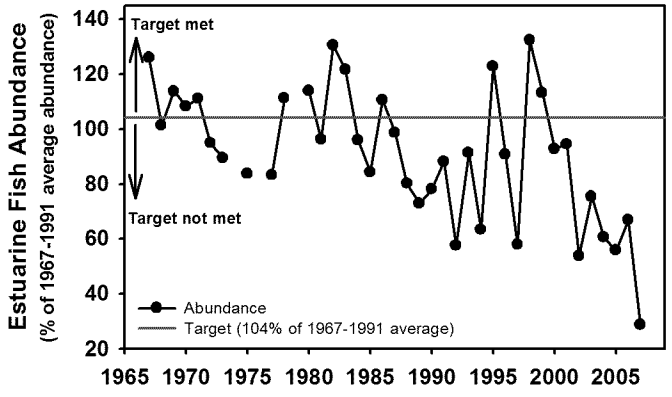

Figure 1. Combined abundance of three native estuarine fish species (delta smelt, longfin smelt, and splittail) relative to their average abundance during the 1967-1991 period. The performance target is an abundance level that is greater than 104% of the 1967-1991 average.

collapsing). This target complements but does not replace existing statutory and regulatory targets for Bay-Delta species, including the federal and state requirements to double natural production of Chinook salmon and other anadromous fish species.

Habitats

Three of the performance targets are designed to restore the extent and diversity of physical habitat types and the complexity of channel configurations by restoring specific acreages of tidal marsh, uplands and seasonal wetlands, and floodplains.

Target 2. Restore 80,000 acres of tidal marsh habitat in the Delta and 50,000 acres of tidal marsh habitat in Suisun Marsh.

This performance target measures the total area of vegetated lands with elevations ranging from mean lower low water to mean higher high water that are fully exposed to tidal action and are connected to the other tidal marshes, the Delta and/or the estuary by waterways. These habitats support estuarine and migratory species, increase primary and secondary productivity in the estuary, export of carbon and food organisms to the Delta and estuary, and improve water quality by filtering contaminants from surface runoff and tidally exchanged waters. More than 90% of historic tidal marsh habitat has been lost in the Delta and Suisun Marsh; therefore the target levels represent the total areas of land with the appropriate elevation in each region. The state already owns significant amounts of land in the Delta that could be restored as tidal marsh.

Target 3. Restore 130,000 acres of terrestrial grasslands and seasonal wetland complexes in the Delta and 5000 acres in Suisun Marsh.

This performance target measures the total area of lands in the Delta and Suisun Marsh with elevations above mean higher high water that support terrestrial grasslands and/or season wetland complexes. These habitats support wildlife, improve water quality by filtering contaminants in surface runoff, and provide accommodation space for sea level rise; therefore the target levels represent the total areas of land with the appropriate elevation in each region.

Target 4. Restore 60,000 acres of floodplain habitat to seasonal inundation for a minimum of 45 consecutive days at least once every two years.

This performance target measures the total area of lands adjacent to Delta tributary rivers with elevations above mean higher high water that are inundated by river flow during the spring (February-May). Seasonally inundated floodplains provide spawning habitat for splittail (one of the target estuarine fish species), an enhanced migration corridor for juvenile salmonids, robust primary and secondary productivity for export to the Delta, and improved flood protection in adjacent and downstream areas. The target season and acreage and duration levels are designed to support these objectives.

Ecological Processes

Ecological processes in the Delta include transport of materials (e.g., by flow and tidal exchange across connections between different habitat types), primary and secondary productivity, seasonal variability in environmental conditions (e.g., flow, location and

area of low salinity habitat, temperature), and disturbance (e.g., flood events). Some of these processes are provided by the natural function of specific habitat types (e.g., tidal marshes or floodplains) but others are tightly linked with water management operations that control freshwater inflows to the estuary. Two of the performance targets are designed to address seasonal freshwater inflows and the resultant estuarine open water habitat quantity and quality.

Target 5. Restore spring Delta outflow to provide low salinity habitat in Suisun Bay, with average February-June X2 values ranging from less than or equal to 70 km from the Golden Gate in critically dry years to less than or equal to 58 km in wet years.

This performance target measures the volume of Delta outflow (or freshwater inflow into San Francisco Bay) and the resultant location of low salinity, open water habitat during the spring (February-June; Figure 2). The ecologically important spring season is when upstream dam and Delta water export operations have had the greatest effects, reducing spring outflows by more than 50% in many years. The water year type dependent target levels are based on statistically significant relationships between spring

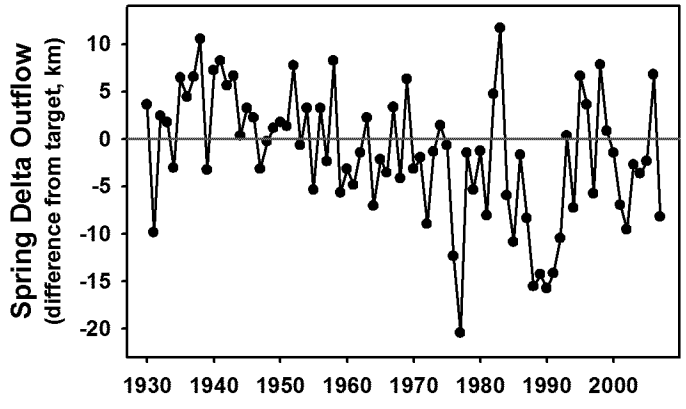

Figure 2. Spring Delta outflow (as X2) compared to the water year type dependent spring outflow target (as X2). The performance target varies with water year type and is therefore shown at 0 as the horizontal red line. The Y axis shows the difference in measured spring X2 from the performance target: positive values indicate that outflow exceeded the target, negative values indicate that outflow was less than the target.

outflow and estuarine fish population abundance and designed to provide conditions that previously supported estuarine fish populations at levels that would meet Target 1 by increasing Delta outflow to about 65% of unimpaired runoff.

Target 6. Restore fall Delta outflow to provide low salinity habitat downstream of the Sacramento-San Joaquin River confluence, with September-November average X2 values less than 80 km in all years except critically dry years.

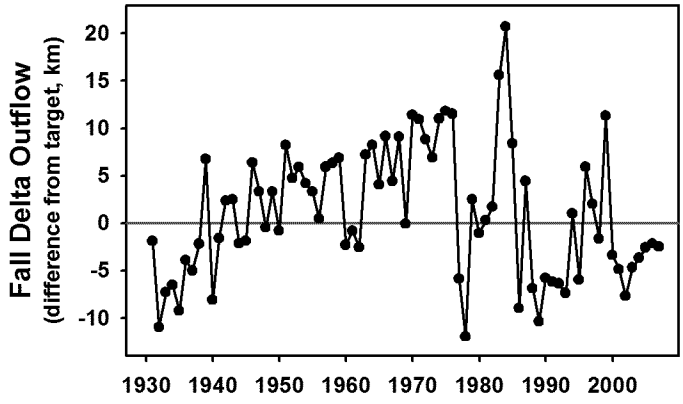

Figure 3. Fall Delta outflow (as X2) compared to the water year type dependent outflow target (as X2). The performance target varies with water year type and is therefore shown at 0 as the horizontal red line. The Y axis shows the difference in measured fall X2 from the performance target: positive values indicate that outflow exceeded the target, negative values indicate that outflow was less than the target.

This performance target measures the volume of freshwater Delta outflow (or freshwater inflow into San Francisco Bay) and the resultant quantity and quality of low salinity, open water habitat during the fall (September-November; Figure 3). Declining freshwater outflows during this season are correlated with degraded open water habitat conditions and declines in delta smelt population abundance. The water year type dependent target level is designed to provide good open water habitat quality.

Stressors

The Delta ecosystem is adversely affected by both anthropogenic (e.g., entrainment, pollution) and biological stressors (invasive species). Entrainment and pollution are

directly responsive to management actions but the prevalence of invasive species in any ecosystem is as much an indicator of degraded habitat conditions resulting from loss of physical habitat, altered flow regimes, and impaired water quality as it is a driver of ecological problems. Therefore, carefully designed management and restoration actions to meet habitat, ecological processes, and water quality performance targets will also function to reduce the impacts of invasive species. Three performance measures address entrainment and contaminants.

Target 7. Limit annual entrainment losses of estuarine fish species to less than 5% of the population and to less than 2% for migratory fish species.

This performance target measures the percentage of the populations of estuarine and migratory fish species that are entrained into water diversions located in the Delta and Suisun Marsh. Entrainment of estuarine and migratory fishes at the more the 2000 water diversions in the Delta and Suisun Marsh can be a significant contributor to population declines in some years. The target levels are designed to reduce entrainment mortality to levels that are proportional to species population size and low enough to not cause the populations to decline.

Target 8. Limit total ammonia concentration to <0.07 mg/L and unionized ammonia concentration to <0.01 mg/l in Delta waters.

This performance target measures the concentrations of total ammonia and unionized ammonia in Delta waters. High concentrations of total ammonia can inhibit

phytoplankton production and high concentrations of unionized ammonia are directly toxic to fishes. The target levels are set at levels that eliminate these adverse effects.

Target 9. Reduce discharge of contaminants into Delta waterways and tributary rivers so that <5% of estuarine and anadromous fish populations exhibit evidence of toxic exposure and there are zero incidents of fish kills.

This performance target measures the prevalence of toxic contaminants in waters and sediments of the upper estuary, Delta, and tributary rivers by evaluating contaminant effects in fish species that are frequently and regularly sampled in the system. The target levels are designed to prevent incidents of direct mortality from contaminants and to reduce contaminant discharges to levels where only a small fraction of resident and migratory fish populations are exposed and/or affected.

More detail on the conceptual framework, specific rationales, and strategies for implementation of the ecosystem targets is contained in Attachment 1 (The Bay Institute, *Targets for protection of the Delta ecosystem as an integral part of a healthy estuary*).

Incorporating Ecosystem Targets into State and Local Permits and Licenses

The Delta ecosystem targets must drive decision-making about water policy and land use. To that end, the Strategic Plan should propose that:

1. The legislature should adopt these targets by statute as requirements to be incorporated in all relevant state and local permits and licenses, and as objectives for all relevant state planning and management activities.
2. The State Water Board should review and revise all relevant water rights permits, waste discharge requirements, and other relevant permits and licenses to comply with the appropriate ecosystem targets.
3. All state and local agencies with authority over land use in the Delta should review and revise all relevant general plans, permitting approval criteria, and pending permits and licenses to comply with the appropriate ecosystem targets.

Securing and Managing Additional Water for the Environment, Including a New Environmental Water Right

The current allocation of water for environmental purposes has not been sufficient to prevent collapse of the Delta ecosystem. While a number of factors are implicated in this collapse, the long-term, radical alteration of hydrologic patterns and decrease in Delta outflow under most conditions has been a primary driver of habitat degradation, rendering the Delta more vulnerable to secondary factors that would not be as likely to adversely affect a healthy estuary.

The ecosystem targets proposed above include several that will provide high quality hydrological conditions for estuarine species and habitats. For a variety of reasons, however, complying with these targets must be combined with the dedication of additional water supplies for Delta ecosystem protection that can be used in a flexible,

adaptively managed fashion in order to augment baseline regulatory protections. These additional water supplies can be provided under a new environmental water right and/or agreements that ensure environmental control over existing and new water supply infrastructure.

First, changes in operations and in storage and conveyance capacity in and upstream of the Delta, and in areas exporting water from Northern California, can undermine the protections afforded by any set of regulatory requirements or other targets, as evidenced by the recent shifts in the timing and amounts of export pumping and in the capacity to store exported water, which have played a major role in the pelagic fish population collapse. New environmental water would be used to avoid or offset such shifting impacts. Second, environmental conditions in the Delta are highly volatile as a result of both the accelerating effects of global warming and depressed population levels of native species. Episodic events that are not easy to predict may have a significant impact on the viability of estuarine species. New environmental water would be used to rapidly respond to emerging problems and fill gaps in the baseline regulatory requirements and other targets. Third, the amount of water currently dedicated to flexible environmental use under the Central Valley Project Improvement Act and the Environmental Water Account has been relatively trivial compared to the amount of water extracted from the Delta ecosystem and the amount of water needed to improve habitat conditions. New environmental water, if sufficient in magnitude, would allow for large-scale improvements in hydrological conditions for estuarine species on a real-time basis. In

summary, new environmental water would serve as a buffer between baseline protections and emerging, episodic and shifting impacts on estuarine species.

For these reasons, the Strategic plan should propose that:

1. The legislature should create a new environmental water right, i.e., a water right that allows for the appropriation of water for Delta ecosystem protection in order to augment minimum regulatory requirements.
2. Other arrangements should also be made to secure additional environmental control over existing and new water supply infrastructure.
3. A share of water stored and conveyed throughout the Delta watershed sufficient to achieve ecosystem targets (in combination with regulatory requirements) and provide an adequate buffer above attainment of targets should be secured to endow the new environmental water right and/or implement other environmental water arrangements. This environmental water should not be reliant on purchased water, since funding and purchase prices fluctuate from year to year, and long-term voluntary agreements are difficult to arrange.
4. The new environmental water should be managed by a new Delta Water Master (see below).

GOVERNANCE AND STRATEGIC FINANCE

This section provides greater detail on steps 4 through 8 as described on page 4.

Delta Water Master

Delta water operations – in-Delta diversions and interbasin water transfers – are managed on a real-time basis by water agencies primarily concerned with maximizing water deliveries while minimizing environmental compliance obligations. Regulators and resource agencies may set the baseline terms of compliance in permits but have limited or no ability to make direct decisions on a real-time basis regarding operational changes to avoid adverse habitat conditions or provide improved habitat conditions.

The creation of a new entity to act as a Delta Water Master (DWM) to manage a new environmental water right and oversee water operations in the Delta and interbasin transfers would correct this imbalance and elevate the place of the Delta ecosystem as a co-equal value in water management. In effect, the DWM would be able to flip the switches and turn the dials, just as water project operators do to maximize project deliveries today. The proposed DWM is the "functional equivalent" of the proposed Delta Water Management Commission that was included in our July 2007 recommendations to the Delta Vision Blue Ribbon Task Force.

The DWM would have the authority to:

1. Make releases from water stored or otherwise controlled by the new environmental water right to augment regulatory requirements. These releases could be used to directly improve habitat conditions or to offset reductions in diversions.
2. Require reductions in diversions and exports within the Delta and throughout its watershed to improve inflows, outflows, and water quality as needed.
3. Approve operational decisions by water project agencies involving interbasin transfers.
4. Operational decisions made by the DWM may be made in advance or in real time in response to biological and hydrological monitoring.
5. Administer fees imposed by the State Water Resources Control Board and/or directly impose fees.
6. Coordinate the activities of state and federal agencies that have legal responsibilities for fishery and water quality protection, including but not limited to the California Department of Fish and Game, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Environmental Protection Agency. (This coordination function is not intended to have any effect on the existing statutory obligations of these agencies).

For more ideas on how the DWM could function, see Attachment 2 (Environmental Defense Fund, *Increasing the Flexibility of Environmental Water Supply Operations in the Delta*).

There are many ways to structure the DWM. Primarily, it is critical that a streamlined entity be created that would effectively and efficiently coordinate all agencies with legal

responsibilities for protecting water quality and natural resources in the Delta. Under one potential approach, the DWM entity would be managed by an executive director with the authority to hire sufficient staff to perform the functions described above. The executive director would be appointed by the State Water Board, and all decisions of the DWM would be subject to the concurrence of the Board (or its executive director). Under an alternative approach, the DWM entity would be overseen by a board consisting of members filling specific positions with expertise in Delta agriculture; Delta communities; export water use; commercial and recreational fishing; communities downstream of the Delta; environmental justice; water quality; public interest environmental advocacy; and aquatic biology. The members would be appointed by the Governor (5), the President Pro Tem of the Senate (2) and the Speaker of the Assembly (2). Their authority would be delegated from the State Water Board, and their decisions would be subject to the oversight and concurrence of the State Board.

The DWM would have the authority to impose new fees and/or would administer fees collected by the State Board, which already has the authority to impose fees. These fees would be imposed in the following areas:

Ecosystem Restoration: A fee for ecosystem restoration is required to provide more complete mitigation for the system-wide impacts of water diversions in the watershed. The fee should be imposed on all water diverted from the watershed. However, this state fee should take into account the contributions made to the Central Valley Project Restoration Fund for a system-wide mitigation program. The goal of the ecosystem restoration fee is to

create an equitable, watershed-based, state Bay-Delta restoration fund parallel to that created for the Central Valley Project by the Central Valley Project Improvement Act. These funds should be awarded by the DWM to restoration program managers such as the Department of Fish and Game.

Delta Flood Management: A fee on water exported from the Delta should be created to provide funding for flood management efforts in the Delta that produce direct reliability benefits for the exporters. These funds should be awarded by the DWM to flood management entities such as the Department of Water Resources Division of Flood Management to implement portions of the State Plan of Flood Control (currently under development) that provide direct reliability benefits for the exporters. This fee should be designed to ensure that the flood management program is consistent with ecosystem restoration goals.

Science: A fee to provide ongoing, reliable support for the existing Bay-Delta science program would allow the state to better understand the impacts of water management and allow more effective management over time.

DWM Management: Fees should be imposed to fund the activities of the DWM. These activities will include operational costs, staffing costs, and potentially costs of storing and releasing environmental water. The DWM will not buy or sell water supplies in the normal course of business, however, so it is not expected that fees will be collected for this purpose.

Land Use Regulation

In our July 2007 recommendations, we proposed the creation of a Delta Conservation and Development Commission with authority to regulate land use, protect and restore habitat, and address water quality, on the pattern of the existing Bay Conservation and Development Commission. (This entity could perhaps also be established by modifying the authority of the existing Delta Protection Commission). This element should be included in the 2008 Strategic Plan.

Special Status for the Delta

In our July 2007 recommendations, we proposed state and federal designations for the Delta designed to strengthen the "sense of place" in the Delta, increase public awareness of this unique resource, and drive efforts to acquire, manage and restore habitat areas in protected zones throughout the Delta. Specifically, the Strategic Plan should propose that:

1. The state should, working with Delta communities, create a Delta State Park. This park would also serve the purpose of unifying the different state property interests in the Delta. The state is already an extensive land owner in the Delta. Over time, particularly as restoration efforts proceed, existing state land (e.g. Sherman Island) and additional lands that will be purchased by the state to facilitate ecosystem restoration should be unified as separate units in a single state park. The Sonoma Coast State Park provides an example of a state park composed of several different units, but retaining a single identity and unified management.

2. The federal government should, working with Delta communities, designate the Delta as a National Heritage Area. This designation would reflect the broad cultural, historic and natural values of the Delta. It is likely that most public purchases in the Delta in the near future would be made with state, not federal funds. This fact makes the NHA designation particularly appropriate, as the NHA model is not based on federal ownership and management. The NHA designation, however, could make a significant contribution to increasing public awareness of the Delta. See http://www.nps.gov/history/heritageareas/FAQ/INDEX.HTM for more information.

Strategic Finance

Implementing an effective Strategic Plan that successfully addresses a full range of Delta issues will require an extremely large financial investment totaling tens of billions of dollars over the life of the plan. Securing that funding will be a major challenge. Meeting that challenge should not wait until after the plan is written.

Issues related to economics and finance have proven to be important challenges for other water policy efforts in California. The CALFED Bay-Delta Program stumbled over the task of developing a realistic financing plan. Development of a detailed financing plan was not begun until years after the CALFED Record of Decision (ROD) was finalized. The legislature pressured the CALFED Program to develop a financing plan to guide the implementation of the ROD. The CALFED Program did some good work in this area, but the plan was never finalized. As a result, key elements of the CALFED ROD, such as the levee program, were dramatically underfunded. The failure of the CALFED Program regarding

financing contributed to the legislature's loss of confidence in the program and its ultimate failure. The legislature is currently considering SB 1102 (Machado), which would disband the CALFED Program. In 2006, the Governor proposed the creation of a Resource Investment Fund (RIF) to finance water management programs. The RIF proposal failed to win approval in the legislature, in large part due to opposition from water users who did not want to pay into a RIF without knowing how those funds would be spent.

In short, the CALFED ROD was, in some ways, an investment plan without a finance plan. On the other hand, the RIF was a finance plan without an investment plan. With a price tag in the tens of billions of dollars, an effective Delta Vision implementation plan must address both what investments are needed, and how they will be financed. Economics and financing will be central to the success or failure of the Delta Vision strategic plan. Given the scope of this effort, a focus on economics is essential to ensure that the plan is as cost-effective as possible. An early focus on financing is also essential to maximize the chances that the plan will be successfully implemented, rather than merely sit on a shelf gathering dust.

These observations have led to the following initial conclusions, which have shaped our subsequent recommendations.

Businesses and water users seek the most cost-effective solutions, but agencies have not always done so. Water users are very focused on the cost-effectiveness of any benefits they might receive from an investment they are considering. However, policy discussions in the legislature and state and federal agencies regarding potential elements of a comprehensive

Delta plan frequently fail to address the issue of cost-effectiveness. Without a focus on the cost-effectiveness of key elements of a Delta Vision plan, there is a greater risk that water users will be unwilling to invest in that plan. The state does have a successful model that Delta Vision can build on. For example, the state's focus on Integrated Regional Water Management in the last several years has helped the state work collaboratively with local agencies to direct state investments to cost-effective strategies that local agencies are eager to invest in.

In the future – unlike the past - most of the funds to address issues related to the Bay-Delta, particularly to ensure adequate future water supplies, are expected to come from water users, not federal or state general funds or bonds. For example, in testimony before the Senate Committee on Natural Resources and Water on March 11, 2008, the Legislative Analyst reported that "local matches and other local direct expenditures likely outplace state funding for water conservation" and that "local funding for groundwater management far exceeds state local assistance funds by more than 2 to 1." While it is a mark of progress that local beneficiaries are expected to pay for more than two-thirds of the cost of groundwater development, we generally believe that beneficiaries should pay for 100% of benefits received.

Economics and finance will play an important role in the transition from a focus on developing traditional water projects to a focus on improved management and efficiency. We do not mean to suggest that there will be no significant infrastructure investments in the future. However, there is remarkable agreement around the conclusion in the California

State Water Plan Update (2005) that the new water supplies needed to meet California's future water needs will come largely from efficiency, water recycling and improved groundwater management (e.g. groundwater clean-up), not from new surface storage. Almost by definition, effective efficiency programs must focus on cost-effectiveness and financing issues. Internalizing costs are an important part of that process. The energy field has undergone this transition in the last 20 years, resulting in a much sharper focus on cost-effectiveness and user-financing. Environmental limits on the historic pattern of steadily increasing Delta diversions, along with the pressure of global warming on water systems, will, over time, increase the need to focus on economics and finance. Simply put, California is no longer in an era of cheap, abundant water.

With these conclusions in mind, we offer the following recommendations regarding finance and economics.

An integrated approach to economics and financing should be developed as early as possible. Economics and financing are not merely implementation issues to be considered at the end of the process. They should be integrated into the planning process from the start, because they will likely shape the substance of the plan. For example, an early focus on financing will lead potential funders to focus on the cost-effectiveness of proposed projects. The result will be a more effective, less costly plan that is far more likely to be implemented.

A meaningful "beneficiary pays" approach is key. As stated above, water user funding will likely exceed state and federal funding in many areas of the Delta Vision plan. Given this

fact, and given that water users will be unwilling to pay for benefits that their neighbors would receive, it is essential that the Strategic Plan include a meaningful "beneficiary pays" approach to financing. Our remaining recommendations will focus largely on the elements of such an approach.

For example, however Delta conveyance issues are resolved, it is anticipated that levee repair will cost many billions of dollars. Repairing levees would benefit highways, railroads, power transmission, shipping, local communities, and many other interests. To ensure fairness and cost-effectiveness, the strategic plan should identify mechanisms for distributing the costs of levee repair in a rational and equitable way.

The focus should be on cost-effectiveness, including the full cost of protecting environmental resources. There are many ways to meet our future water needs (e.g. efficiency, transfers, conjunctive use, water recycling, traditional water projects.) Likewise, there are different ways to improve flood management in the Delta (e.g. land use decisions, flood bypasses, levee improvements). A focus on cost-effectiveness will help decision-makers select among alternatives and increase the willingness of water users to invest in that plan. Any public funding for water supply should be focused on cost-effective water strategies that are aligned with the priorities of water agencies for investing their own funds. A focus on cost-effectiveness necessarily requires that water strategies are designed in a process that includes a careful evaluation of competing approaches.

Public funds should be dedicated to achieving well defined public benefits. It is not enough merely to promise public benefits. The Strategic Plan should clearly define what constitutes a public benefit. For example, mitigation is not a public benefit. Increasing the reliability of supply for one set of water users is not a public benefit. This step is essential to equitably apportion costs.

Proposals to develop new storage capacity, operated to provide environmental benefits, are essentially mitigation, as they are an admission that operation of existing facilities has over-manipulated the natural hydrograph. The cost of developing any new storage capacity dedicated to the environment should appropriately be borne by user fees rather than taxpayer funds or general obligation bonds. This will ensure that the price of water will better reflect the cost of extracting it for consumptive use.

Unfortunately, there is a long history of unfulfilled promises of public benefits from water projects. Therefore, the Strategic Plan should recommend the creation of effective assurances that provide guarantees that public benefits will be achieved. Water projects have routinely written water contracts with water contractors. These contracts are intended to provide water users with some predictability regarding the allocation of water supply from a particular project. However, water projects have generally not made similar commitments regarding the public benefits that are used as justification for public funding. To the extent that state or federal funds are invested in water projects in the future, as a result of promised public benefits, new enforceable mechanisms should be required that provide some assurance that public benefits will be achieved. These assurances can take several forms:

- Enforceable regulatory commitments.
- Enforceable water efficiency and recycling targets to ensure reasonable use,
- Contracts, including private enforcement agreements and commitments in bonds.
- Governance structures, including ownership interest.

Designing a "beneficiary pays" financing approach for large infrastructure projects. A careful approach is particularly important for large infrastructure projects, because of potential environmental impacts, the large amount of funding required, and the risk of stranded investments in the planning phase if needed financing for implementation fails to appear. Specifically, the Strategic Plan should condition the consideration and selection of any large infrastructure project on the following:

- Requiring a completed finance plan as a precondition for design and construction phases of a large capital project.
- Requiring local agencies to prepare a finance plan to pay the local share of a capital project.
- Requiring participation from potential beneficiaries in funding for initial studies.
- Establishing a clear "without project" baseline from which to measure project benefits.
- Assigning cost shares proportionally to expected benefits. As stated above, public benefits of mitigating project impacts should be subsidized by water user fees.

Learning from California's pioneering energy and climate programs. The Delta Vision Task Force should consider the approach to economics and finance in California's energy and climate programs. We recommend that the Task Force consider incorporating the following concepts in the implementation plan:

- The creation of a loading order and public goods charge. These policy tools guide energy investments to cost-effective solutions and provide use-based financing. They have played a major part in California's dramatic progress on energy efficiency. (See Natural Resources Defense Council, *Transforming Water Use: A California Water Efficiency Agenda for the 21st Century*, previously submitted to the Task Force.)
- The energy benefits of water conservation and other tools that could increase regional self-sufficiency could provide a significant source of new funding.
- The carbon sequestration benefits of wetlands restoration in the Delta, particularly on subsided Delta islands, could provide an additional source of funding.

Create a system of equitable user fees to internalize externalities. User fees are essential to ending the "free rider" syndrome and ensuring that all users address impacts to which they contribute and support programs from which they benefit. There are many examples of such fees. (e.g. California's commercial salmon fishermen purchase a salmon stamp to support the health of that fishery.) The Strategic Plan should propose a carefully designed water use fee.

A water user fee should be primarily based on volume and applied to all water diverted within the Bay-Delta watershed for consumptive use on farms and in cities. It may also be appropriate to incorporate diversions for hydropower as part of the water user fee.

For example, Delta Vision has acknowledged that all water users in the watershed contribute to the degraded state of the Delta ecosystem. Granted, some water projects are a larger cause than others. However, all water users should contribute to the effort to restore the Delta environment. The Central Valley Project does collect a user fee for a system-wide program to mitigate for the impacts of the project. Other water users in the watershed, however, contribute little or nothing to address Delta issues. User fees would be an important complement to public funding for this effort and are likely to prove to be essential to the long term success of any Delta restoration effort.

Similar user fees could be developed to provide support for Delta flood management from the export water users who depend on Delta levees. Likewise, a user fee could be designed to support an ongoing science program for the Bay-Delta ecosystem. (See recommendations above regarding the Delta Water Master).

Use fees must be designed carefully to tie fees to specific impacts and benefits. Likewise, fees must be carefully designed to address the risk that the general fund deficit could result in pressure to divert revenue from these user fees to other purposes. A system of user fees must not be allowed to become a de facto tax, providing revenue for the state's general fund. (This recommendation is also discussed in our governance recommendations.)

Look for opportunities to reduce water subsidies that increase pressure for diversions in the Bay-Delta watershed. Water resources throughout the Bay-Delta watershed are substantially over-allocated. Moving away from historic water subsidies could be an important part of a Delta strategy. For example, expiring CVP water contracts provide an opportunity for the Bureau of Reclamation to move more toward realistic cost- and market-based pricing. Reducing such subsidies could provide increased incentives for users to invest in efficiency and decrease pressure on the Delta.